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THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re U.S. Patent Application of:  
Graham, et al.

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) Group Art Unit: 1742

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Conf. No.: 4366

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) Examiner: William T. Leader

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Application No. 09/977,410

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Filed: October 15, 2001

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For: Electroplating System Having  
Auxiliary Electrode Exterior To  
Main Reactor Chamber For Contact  
Cleaning Operating

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APPLICANTS' AMENDED APPEAL BRIEF

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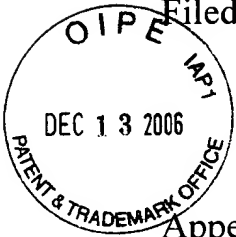
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Applicants submit this Appeal Brief in furtherance of the Notice of Appeal mailed in accordance with 37 C.F.R. §1.8(a) on June 1, 2006. Applicants request a three month extension of time; hence this Brief is timely filed. This application was filed to provoke an interference with U.S. Patent No. 6,132,587, issued to Jorne, et al. on October 17, 2000. Applicants copied claims 1, 2, 5 and 19 of the Jorne patent as claims 35-38, respectively.

I. REAL PARTY IN INTEREST

All right, title and interest in and to this patent application has previously been assigned to Semitool, Inc.

II. RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences to this patent application. There had been, in this application, an earlier appeal, but that appeal became moot when the Examiner withdrew the final rejection and reopened prosecution.

### III. STATUS OF CLAIMS

The application was filed with claims 1 through 34, all of which were cancelled by way of a preliminary amendment and replaced by claims 35 through 38. The status of the claims is as follows:

- (a) claims 35, 36 and 38 are pending;
- (b) no claims have been withdrawn from consideration;
- (c) no claims have been cancelled;
- (d) claims 35, 36 and 38 have been rejected;
- (e) no claims have be objected to;
- (f) claims 35, 36 and 38 are on appeal.

Each of claims 35, 36 and 38 on appeal is included in the attached Appendix A.

### IV. STATUS OF AMENDMENTS

No Amendments have been filed subsequent to the final rejection of the claims in the Final Office Action of December 1, 2005.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The present invention relates to an electroplating device (see, for example, Fig. 1, item 50 and specification at page 7, lines 1-3; Figs. 6-8 and specification at page 14, lines 15-17 and page 20, lines 1-2) commonly used in the metallization of semiconductor wafers (Fig. 1, item 55), and particularly semiconductor wafers formed of silicon. Allowed claim 35 (corresponding to Jorne patent claim 1), for example, includes, in combination, a reservoir for containing the electrolyte (Fig. 8, items 303 and 904 and specification at page 20, lines 2-14 and page 21, lines 2-3) for plating a metal such as copper onto the wafer, a holder (Fig. 8, item 906) positioned to hold the wafer (Fig. 8, W) above the reservoir (Specification at page 22, lines 16-17) and a counter-electrode (Fig. 8, item 334 and specification at page 21, lines 18-21) in the reservoir.

The electroplating device of claim 35 also includes means for passing a current between the counter-electrode and the wafer (Fig. 8, item 906, wafer rotor assembly, item 984, a rotor assembly and items 979, plurality of wafer-engaging fingers; specification at page 22, lines 17-22) and a pump for pumping electrolytes from the reservoir to the wafer (Specification at page 27, lines 3-11).

Also included in the device is a non-conducting porous separator (Fig. 8, item 375) positioned between the wafer holder (Fig. 8, item 906) and the counter-electrode (Fig. 8, item 334) to control the distribution of the electrolyte and thereby insuring a more uniform plating of the wafer (Specification at page 21, line 23 through page 22, line 2).

Claim 36 (corresponding to Jorne patent claim 2) is similar to claim 35, except that it does not call for a non-conducting porous separator. Claim 36 requires that the diameter of the counter-electrode be smaller than the diameter of the wafer holder (Fig. 8 illustrates that the diameter of the anode 334 is smaller than the diameter of the wafer holder 906). Claim 38 (corresponding to Jorne patent claim 19) is similar to claim 35. It calls for a distributor (Fig. 8, item 375) positioned in the reservoir which includes a disk having holes therein to provide flows of electrolytes through the disk uniform along a radius of the disk (Specification at page 21, line 23 through page 22, line 2).

#### VI. GROUND'S OF REJECTION TO BE REVIEWED ON APPEAL

The following issues are presented for review by this Board:



- (a) Whether claims 35 and 38 fail to comply with the written description requirement of 35 U.S.C. § 112; and
- (b) Whether claim 36 is anticipated by Mori U.S. Patent No. 5,443,707.

## VII. ARGUMENT

### A. The Examiner's Having Previously Allowed Claim 35 Demonstrates Error In The Claimed Rejection Based On Section 112

The history of this application is, applicants submit, persuasive on why claims 35 and 38 should not have been rejected. As has already been pointed out, the present application was filed for the purpose of provoking an interference with the Jorne patent. The Examiner's initial position for refusing to declare the interference was that none of the claims which had been copied verbatim from the Jorne patent were patentable. Applicants pointed out to the Examiner why claim 35 was patentable and initially the Examiner agreed. He allowed that claim but continued to reject other claims.

That forced applicants to file a notice of appeal. An appeal brief was filed in this application in December of 2004. At that time, applicants pointed out that the allowance of claim 35 -- identical to claim 1 of the Jorne patent -- demonstrated compliance with 37 C.F.R. § 1.606. In other words, the Examiner's allowance of claim 35 established the presence of patentable common subject matter, requiring that this application be placed in interference with the Jorne patent.

Applicants further pointed out that respecting the other claims with which the Examiner had questions as to patentability, the proper course of action was to resolve those patentability issues in an inter partes proceeding. That would permit both applicants herein and the patentee Jorne to be heard on the Examiner's position. The Court of Appeals took that approach in Schulze v. Green (Fed. Cir., 1998), 136 F.3d 786, 45 USPQ2d 1770, where the Court observed that inter partes resolution of such issues assured consistent treatment of claims for both applicants herein and Jorne. Otherwise, there was risk that the PTO might reach one conclusion with respect to a claim that applicants copied from Jorne and another

conclusion as to the same claim appearing in Jorne's patent. That would be unfair to both parties.

Rather than deal with that question on appeal, the Examiner opted to, in a new rejection, withdraw the allowance of claim 35. In other words, the Examiner interposed a new rejection principally for the purpose of avoiding declaring the interference of a claim previously recognized as patentable.

B. The Examiner's New Rejection Of Claim 35  
(And Claim 38 As Well) Is A Technical  
Rejection Lacking in Merit

In his rejection of claim 35 (and claim 38, as well), the Examiner takes the position that both claims are not supported by the present specification, and particularly the written description as required by §112, ¶1. The issue raised by the Examiner turns on whether the specification supports the limitation of claim 35 calling for a "non-conducting porous separator".

In response to that position, applicants pointed out that the present specification describes a diffusion plate 375 above the anode to control the fluid flow of plating fluid and provide more even distribution of the fluid plating bath

“across the wafer W” (Specification, p. 21). That disclosure of the diffusion plate 375 supports, applicants submit, the phrase “non-conducting porous separator” which the Examiner suggests is not supported by the specification.

The Examiner’s only argument now is that the openings in the diffusion plate 375 are not really porous, but instead are holes and that, the Examiner argues, represents a structural difference between the diffusion plate and the porous separator. That argument overlooks the law that claims should be given the broadest reasonable interpretation during prosecution. See, for example, In re Bigio (Fed. Cir., 2004), 381 F.3d 1320, 1324, 72 USPQ2d 1209, 1210-11.

Indeed, in In re American Academy Of Science Tech Center (Fed. Cir., 2004), 367 F.3d 1359, 1364, 70 USPQ2d 1827, 1830, the Court of Appeals for the Federal Circuit wrote:

“During examination, ‘claims . . . are to be given their broadest reasonable interpretation consistent with the specification, and . . . claim language should be read in light of the specification as it would be interpreted by one of ordinary skill in the art’.”

Whereas a hole may, under some circumstances, have a larger dimension than a pore, functionally in the context of this invention there is no substantive difference. Both the pores of the Jorne patent and the holes described in the present specification function in precisely the same way, namely to control the flow of fluid to promote uniform distribution of liquid of the surface wafer. The size of the openings -- whether they be pores or holes -- simply does not matter so long as the common function of uniform distribution of liquid over the surface of the wafer is satisfied.

The Examiner's overly narrow interpretation is inconsistent with recent developments in the law dealing with the application of § 112, ¶1 in interference situations. A case in point is Bilstad v. Wakalopulos (Fed. Cir., 2004), 386 F.3d 1116, 1125, 72 USPQ2d 1785, 1791-1792, where the Court observed that the controlling standard is what one skilled in the art would reasonably understand from the application. So long as there is uniform distribution of fluid across the wafer, it matters not whether the liquid is passing through holes or pores. That is particularly so where, as here, the claim in issue does not limit the size of the

openings. Thus, the present specification plainly supports openings of any dimension, and hence supports holes and pores.

Respecting claim 38, the Examiner also focuses on the portion of the claim calling for “a distributor positioned in said reservoir including a disk having a plurality of holes adapted to provide a flow of electrolyte through the disk that is uniform along the radius of the disk”. As already noted and the Examiner has observed, the present specification is clear in describing the function of the diffusion plate 375 in Fig. 8 of the drawings as ensuring more even distribution of the plating fluid “across the Wafer”. In his argument that applicants do not describe uniformity “along the radius of the wafer”, the Examiner has failed to take into account the very next sentence of the specification. That next portion of the specification calls for fluid passages provided “over all or a portion” of the diffusion plate. As is plain to see, passages over all of the diffusion plate necessarily means that the openings extend over a diameter of the wafer along two radiuses. In short, one skilled in the art would therefore be lead to the conclusion that uniformity “along the radius” is indeed supported by the present specification.

In sum, the present specification fairly supports both claims 35 and 38, copied from the Jorne patent. This Board should therefore direct that an interference be declared forthwith.

C. Applicants' Right To An Interference Having Been Established, This Board Should Defer Consideration Of Claim 36 So That The Patentability Of That Claim Over The Prior Art Can Be Determined In An Inter Partes Context

Applicants submit that, at the very least, claim 35 of the present application -- corresponding to claim 1 of the Jorne patent -- is clearly patentable. The Examiner has already ruled that it was once, and the record demonstrates that the only reason the Examiner changed his position was the fact that allowance of that claim demanded that an interference be declared. That is still true today. So long as claim 35 is patentable, and the record here clearly shows that it is, this Board should declare the interference.

Both Federal Circuit precedent and fundamental fairness require that the patentability of claim 36, presently rejected over the prior art, be determined in an inter partes context. Otherwise, there is a risk that the tribunals of the Patent Office could reach diametrically opposite conclusions respecting the patentability

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of the same claim, depending on whether it is pending in the present application or is already allowed as in the Jorne patent. In sum, the decision of the Court in Schulze v. Green (Fed. Cir., 1998), 136 F.3d 786, 45 USPQ2d 1770, mandates that the patentability of claim 36 be determined inter partes.

This Board should therefore defer consideration of that claim until the interference is declared.

### CONCLUSION

The Examiner's decision should be reversed and an interference declared.



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Respectfully submitted,

A handwritten signature in black ink, appearing to read "Keith V. Rockey", written over a horizontal line.

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## VIII. CLAIMS APPENDIX

35. An electroplating device for wafer metallization of a wafer for interconnection comprising:

a reservoir for electrolyte,

a holder adapted to hold the wafer above said reservoir,

a counter-electrode in said reservoir,

means adapted for passing current between said counter-electrode and the wafer in said holder,

a pump adapted for pumping electrolyte from said reservoir against the wafer in said holder,

a non-conducting porous separator between said wafer holder and said counter-electrode.

36. An electroplating device for wafer metallization of a wafer for interconnection comprising:

a reservoir for electrolyte,

a holder adapted to hold the wafer above said reservoir,

a counter-electrode in said reservoir, said counter-electrode disposed concentrically with said holder,

means adapted for passing current between said counter-electrode and the wafer in said holder,

a pump adapted for pumping electrolyte from said reservoir against the water in said holder, and

Wherein the diameter of said counter-electrode is smaller than the diameter of said wafer holder.

38. An electroplating device of wafers for interconnection comprising:

a reservoir for electrolyte,

a holder adapted to hold a wafer above said reservoir,

a counter-electrode in said reservoir,

means for passing current between said counter-electrode and a wafer in said holder,

a pump for pumping electrolyte from said reservoir against said wafer,  
and

a distributor positioned in said reservoir including a disk having a  
plurality of holes adapted to provide a flow of electrolyte through the disk that is  
uniform along a radius of the disk.

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IX. EVIDENCE APPENDIX

None.

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X. RELATED PROCEEDINGS APPENDIX

None.



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Eileen Madrigal